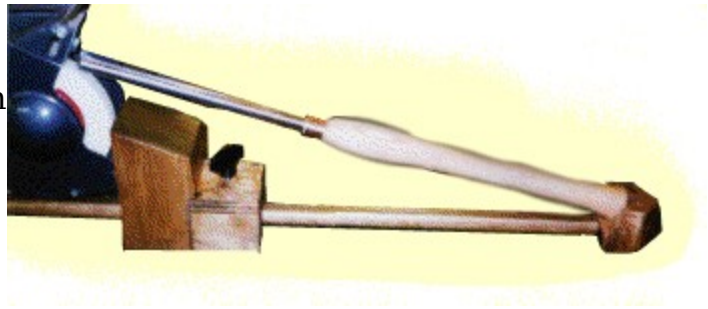
Turning Tool Rest and Grinding Jig

By Larry Gawne



One of the hardest, and most frustrating, things that you have to do as a woodworker is sharpen chisels. This seemingly simple task soon becomes one of the dreaded jobs that you try to avoid for as long as possible. The problem is that sharpening your chisels properly is difficult, and not sharpening them properly affects the quality of your work dramatically. The sharpening fixture is a great time (and money) saver while producing for the beginning turner a perfect cutting edge every time.

Construction

Tools required: Drill, saw, sander, router

Wood required: Maple (or any other scrap hardwood)

Description	Qty	depth	width	length
Tool rest block	(1)	4"	4"	7"
Guide block	(1)	2 1/2"	3"	3"
Cover plate	(1)	3/4"	2 1/2"	3"
Clamp disc	(1)	1 3/8"	1 3/8"	1/2"
Vee tool rest	(1)	2"	2 1/2"	2 1/2"
Dowel	(1)	1"	1"	36"

To make it easier to comprehend, we have split this project into a number of distinct parts that are assembled together at the end.

Tool Rest

The tool rest is a simple piece 4" x 4" x 6". The 6" dimension matches the distance from the base to the center of the grinding wheel. Start by squaring off one end of the block (the bottom of the block) and making sure the sides are square and parallel. Next cut the 20 degree angle in the other end of the block (this is considered to be the top). The total height of this block should match the height from the workbench to the center of the grinding wheel (in this case 6").

The next step is to bore a 1 1/16" hole through the block. The center of this hole should be 1 1/4" from the bottom of the block.

The next step depends on your brand of grinder. In this particular case, the grinder had a protruding casting at the bottom of the grinding wheel housing. This meant that the tool rest couldn't be positioned close enough to the grinder. To overcome this problem, bore two 1 1/2" diameter holes on the back surface of the tool rest, drilling to a depth of 1 1/2". Then chisel out the wood between these two holes to make an oblong slot that will go around the casting on the grinder.

The tool rest is now finished and should be sanded down.

Clamp Block

This piece offered some interesting design challenges. As a result, you will notice that the photo of the unit differs slightly from the design below. This is because with the clamping knob on top (as in the original design), the knob sometimes got in the way and prevented short chisels from sitting flat on the tool rest.

Drill a 1 1/16" diameter hole through the clamp block. The center of this hole should be 1 1/4" from the bottom of the block (as with the tool rest above) and 1 1/2" from the left hand side (in other words, in the center of the block).

Next, drill a 1 1/2" hole perpendicular to the above hole (see diagram). This hole should be drilled to a depth of 1 1/4" so that it breaks through into the previous hole that was drilled. This new hole will accommodate the clamping disc, which is tightened against the main dowel (which runs through the 1 1/16" hole), thus clamping the block into place.

Clamping Disc

The clamping disc is a 1 3/8" diameter by 1/2" long disc. After cutting this to shape, roughly rout out a 1" diameter area in the middle of it to a depth of

1/16". Then, take a thin metal disc and glue it into this routed out area (the knockout tabs from an electrical box are ideal for this). The reason for doing this is to provide a solid metal surface that won't yield when the unit is tightened.

Clamp Block Cover Plate

The clamp block cover is a 3/4" x 2 1/2" x 3" piece of hardwood or plywood. Drill a hole to receive the 1/4" - 20 "T" nut for the clamp screw to work in. It is best to spot face a area so the "T" nut is flush with the surface. When this is done, it is time to assemble the clamping block.

To do this, screw a pan head screw into the "T", dropping the clamping disc into the hole (metal insert up) and then attach the cover plate to the base block with screws.

Vee Block Tool Rest

This piece presented some challenges on how to make it. The best approach is to start with a larger piece of 4 x 4 stock left over from the tool rest and then cut it to the final dimensions at the end.

To cut the Vee pocket make up a router jig by making a internal 90 degree corner in a piece of 1/4" plywood. Each leg of the 90 degree corner should be about 8" long. Clamp this jig to the stock at a 45 degree angle and rout down the Vee pocket to a depth of 1". Next, cut the block to its final dimension of 2 1/2" x 2" x 1/2".

Drill a 1/2" diameter hole to receive the narrow end of the dowel. This is drilled 1/2" up and on the center of the Vee (see diagram).

Finally, cut the 45 degree corners off the back of the block and then sand the back radius for appearance.

Dowel Rod Guide

The first step is to narrow down the last 1 1/4" of the dowel to a 1/2" radius. The easiest way to do this is with a lathe, but you can get adequate results by using a knife to whittle it down, then sanding to a smooth shape. Once you have done this, cut off the end 1/4" so that you have a 1/2" diameter tenon that is 1" long.

The dowel has one flat side which is the result of shaving off 1/8" of the dowel. This can either be done on a table saw or by using a planer (be it a machine or by hand).

Once this is done, glue the dowel into the Vee block, ensuring that the flat on the dowel is perpendicular to the flat Vee pocket (the side of the Vee that your handle is on).

Putting it all together

Final assembly consists of mounting the tool rest and clamp block assembly to the plywood base for the grinder. Special attention should be given to assure that the centerline of the dowel is aligned with the center of the grinding wheel and perpendicular to the axis of the grinding wheel. Both these pieces were attached with wood screws from underneath the plywood base plate. Finally, mount your grinder and you are in business.